

# ShortWave Infrared Focal Plane Technology for Close-Range Active Mineralogy Mapping (SWIFT-CAMM), Phase II

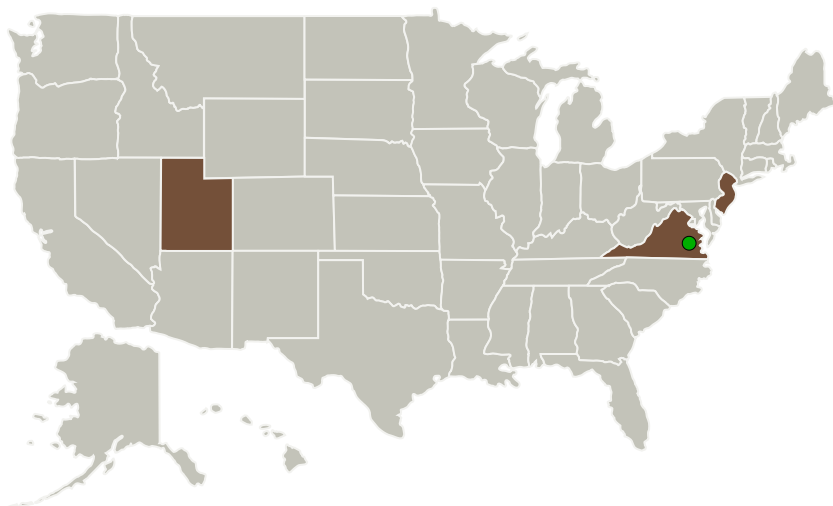
Completed Technology Project (2016 - 2019)



## Project Introduction

We propose to develop a Photon-Counting Integrated Circuit (PCIC) detector and focal plane array (FPA) with highest sensitivity, lowest noise and hence highest signal-to-noise ratio (S/N) among all FPAs covering the shortwave infrared band, for incorporation into a prototype imaging spectroscopy CAMM instrument for real-time operation on a planetary surface to guide rover targeting, sample selection (for missions involving sample return), and science optimization of data returned to earth, thus improving science return from instruments used to study the elemental, chemical, and mineralogical composition of planetary materials. During Phase I, we have successfully proven the concept of a limited-size array of PCIC detector pixels as well as the imaging spectrometer CAMM instrument. In Phase II, we will develop and prototype a PCIC focal plane array (FPA) as well as the imaging spectrometer CAMM instrument.

## Primary U.S. Work Locations and Key Partners



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## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Organizational Responsibility	2
Project Management	2
Images	3
Technology Maturity (TRL)	3
Technology Areas	3
Target Destinations	3

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Organizations Performing Work	Role	Type	Location
Wavefront LLC	Lead Organization	Industry Minority-Owned Business	
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
Utah State University(USU)	Supporting Organization	Academia Alaska Native and Native Hawaiian Serving Institutions (ANNH)	Logan, Utah

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Wavefront LLC

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Jie Yao

**Co-Investigator:**

Jie Yao

## Primary U.S. Work Locations

New Jersey	Utah
Virginia	

## Project Transitions

**September 2016:** Project Start**September 2019:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140799>)

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## Images



### Briefing Chart Image

ShortWave Infrared Focal plane Technology for Close-range Active Mineralogy Mapping (SWIFT-CAMM), Phase II  
(<https://techport.nasa.gov/image/133064>)

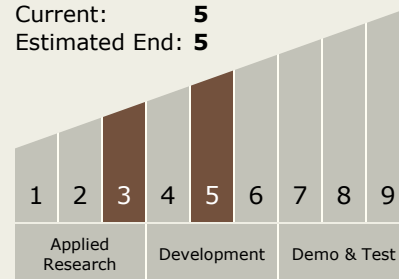


### Final Summary Chart Image

ShortWave Infrared Focal Plane Technology for Close-Range Active Mineralogy Mapping (SWIFT-CAMM), Phase II  
(<https://techport.nasa.gov/image/132912>)

## Technology Maturity (TRL)

Start: **3**  
Current: **5**  
Estimated End: **5**



## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes

## Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System